Claims

1. A method for improving the quality of the output signal of an audio output stage, which comprises at least a modulator circuit (301), **characterized** in that

- a signal generated in the audio output stage, which signal is proportional to a previous digital input signal, is compared by means of feedback to the digital input signal (IN) of the audio output stage in order to generate a digital control signal (307), and

- the operation of said modulator circuit (301) is controlled by means of said digital control signal (307).

2. The method according to claim 1, **characterized** in that the digital control signal (307) is used to change at least one reference level in the modulator circuit (301) of the audio output stage.

3. The method according to claim 1, **characterized** in that said signal generated in the audio output stage proportional to a previous digital input signal is filtered so as to correspond to the frequencies of the digital input signal in order to realize said comparison in the feedback.

4. The method according to claim 3, **characterized** in that in the feedback circuit bits are added to the filtered signal proportional to a previous digital input signal so that said signal will correspond to the digital input signal (IN) as regards the number of bits.

5. The method according to claim 1, **characterized** in that in the feedback circuit the signal proportional to a previous digital input signal is synchronized with the clock frequency of the input signal (IN).

6. The method according to claim 1, **characterized** in that said digital control signal is generated more often than said digital input signal changes.

7. The method according to claim 1, **characterized** in that the method is comprised of steps in which

- a digital input signal brought to the output stage is converted into a pulse train by means of modulation,

- said pulse train is amplified,

- said pulse train is filtered in the feedback circuit to a frequency range corresponding to the input signal,

- the filtered pulse train is converted into a digital signal in the feedback circuit,

- bits are added to said digital signal so that it corresponds to the input digital word as regards the number of bits,

- said input digital word and said digital signal are compared so as to produce a difference signal,

- change data for the digital difference signal are determined, and

- on the basis of said change data the conversion of the input digital word of the output stage into a pulse train is controlled by means of a digital control signal (307).

8. The method according to claim 1, **characterized** in that the method is comprised of steps in which

- a digital input word brought to the output stage is converted into a pulse train by means of modulation,

- said pulse train is amplified,

- said pulse train is filtered so as to make it suitable for output means,

- said pulse train filtered suitable for the output means is filtered in the feedback circuit to a frequency range corresponding to the input signal,

- the filtered pulse train is converted into a digital signal in the feedback circuit,

- bits are added to said digital signal so that it corresponds to the input digital word as regards the number of bits,

- said input digital word and said digital signal are compared so as to produce a difference signal,

- change data for the digital difference signal are determined, and

- on the basis of said change data the conversion of the input digital word of the output stage into a pulse train is controlled by means of a digital control signal (307).

9. The method according to claim 7 ~~or 8~~, **characterized** in that the modulation is performed using pulse density modulation.

10. The method according to claim 7 ~~or 8~~, **characterized** in that the modulation is performed using pulse width modulation.

11. An audio output stage for improving the quality of an output signal, which audio output stage comprises

- a modulator circuit (301) for modulating a digital input signal (IN),

- an amplifier circuit (302) for amplifying the modulated signal,

- a filter circuit (303) for filtering the modulated and amplified signal,

characterized in that the audio output stage further comprises a comparator circuit (305) for comparing the digital input signal (IN) and a signal generated in the output stage, which signal is proportional to a previous digital input signal, and for generating a digital control signal (307) for the modulator circuit (301).

12. The audio output stage according to claim 11, **characterized** in that the signal generated in the audio output stage is brought to the comparator circuit (305) from the output of the amplifier circuit (302).

13. The audio output stage according to claim 11, **characterized** in that the signal generated in the audio output stage is brought to the comparator circuit (305) from the output of the filter circuit (303).

14. The audio output stage according to claim 11, **characterized** in that said modulator circuit (301) is a sigma-delta converter.

15. The audio output stage according to claim 11, **characterized** in that said amplifier circuit (302) is a class D amplifier.

16. The audio output stage according to claim 11, **characterized** in that said filter circuit (303) is a low-pass filter.

17. The audio output stage according to claim 11, **characterized** in that said comparator circuit (305) comprises

- a means (314) to filter a feedback signal,

- a means (308) to A/D convert the filtered feedback signal (304),

- a means (309) to add bits in the A/D-converted feedback signal,

- a means (310) to synchronize the A/D-converted and bit-added feedback signal with the input signal (IN),

- a means (311) to compare the A/D-converted, bit-added and synchronized feedback signal to the input signal (IN) in order to produce a difference signal,

- a means (312) to process said difference signal, and

- a means (313) to convert said difference signal into a suitable control signal (307) on the basis of the result of the difference signal processing.

18. A mobile station comprising an audio output stage (612) for processing a received audio signal, **characterized** in that the audio output stage (612) of the mobile station comprises

- a first means (613) to modulate a digital signal,

- a second means (614) to amplify a modulated signal,

- a third means (615) to filter a modulated and amplified signal,

- a fourth means (616) to generate a digital control signal (307) by comparing the input signal (IN) to a signal generated in the output stage, which signal is proportional to a previous digital input signal, and by processing the signal which is the result of the comparison in such a manner that it becomes a digital control signal suitable for the first means (613).

19. The mobile station according to claim 18, **characterized** in that said mobile station belongs to a digital mobile communication system.